



afranke@geomar.de

Does poly- β -hydroxybutyrate stimulate the immune system of European sea bass larvae?

Andrea Franke¹, Olivia Roth¹, Peter de Schryver², Catriona Clemmesen¹

¹ GEOMAR Helmholtz Center for Ocean Research, Kiel, Germany

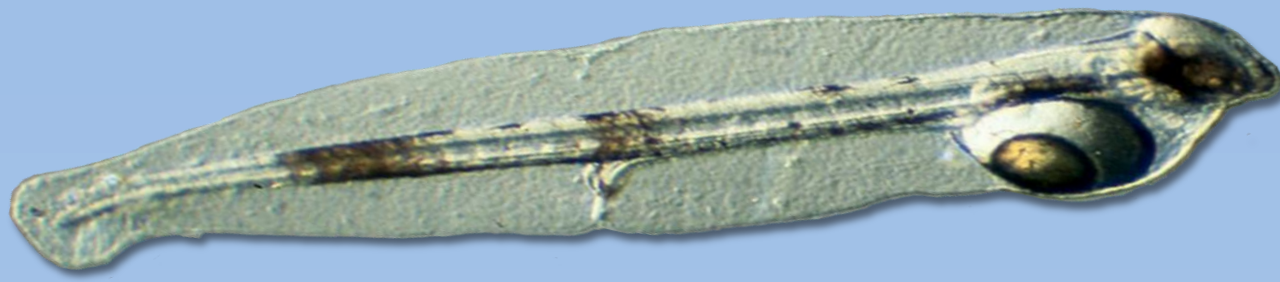
² Laboratory of Aquaculture & Artemia Reference Center, Ghent University, Belgium

BACKGROUND

- Mass mortality of fish larvae is a major **bottleneck** in aquaculture production
- Promising solution:
Application of **dietary supplements** such as **prebiotics** to **improve the immunocompetence** of larval fish

EXPERIMENTAL APPROACH

✧ Species in focus



European sea bass larva ©fishbase.us

- European sea bass (*Dicentrarchus labrax*) larvae were used from **28 days post hatch onwards**

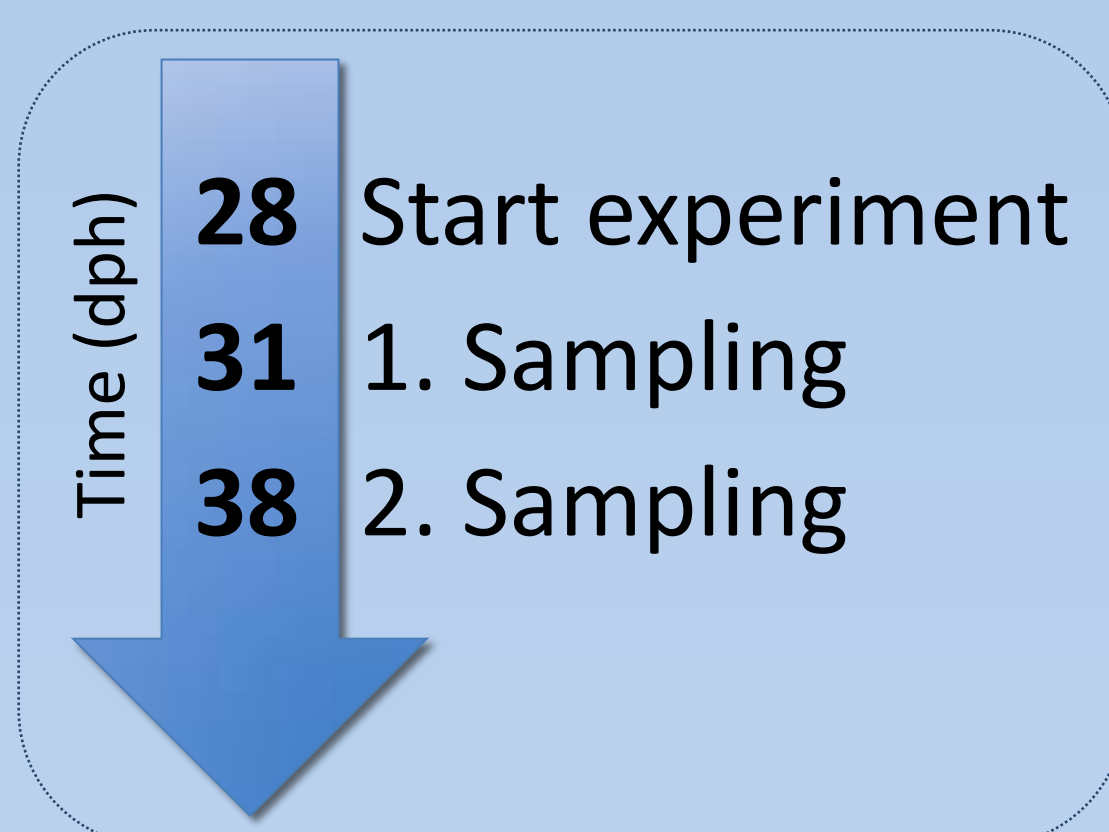
✧ Prebiotic in focus



Bacteria containing PHB inclusions

- **Poly- β -hydroxybutyrate (PHB)** is a bacterial energy storage compound which was shown to have an immunostimulatory potential
(De Schryver et al., 2011, Environmental Microbiology 13(4), 1042-1051)
- Freeze-dried **PHB-containing bacteria** (*Alcaligenes eutrophus*) with a **high PHB content (75%)** were used

✧ Experimental timeline & design



- Sea bass larvae were reared in a flow-through system and fed with brine shrimp nauplii (Instar II) 3 times a day over a period of 10 days
- Experimental groups (in triplicate):
 1. **PHB group**: PHB-containing bacteria were encapsulated in brine shrimp
 2. **Control group**: no PHB

GENE EXPRESSION: RESULTS & CONCLUSION

PHB enhances the immune response in sea bass larvae on the gene expression level

